

REMARKS

The final Office Action dated January 5, 2007, and the patents and publications relied on therein have been carefully reviewed, and in view of the above changes and following remarks reconsideration and allowance of all the claims pending in the application are respectfully requested.

Claims 1-43 stand rejected. By this amendment, claims 1, 16 and 30 have been amended, and claims 1-43 are pending.

The Objection To The Claims

Claims 1-43 stand objected to because the Examiner has indicated that the claims should include the language “n and c being integer values numbers greater than zero.”

Applicants have amended claims 1, 16 and 30, as suggested by the Examiner with respect to the objection raised by the Examiner. It is respectfully requested that the Examiner enter the amendments to claims 1, 16 and 30 because the amendments to claims 1, 16 and 30 do not raise new issues that would require further consideration and/or search. In particular, Applicants respectfully note that the Examiner has suggested the amendments to claims 1, 16 and 30, and because the Examiner has suggested the amendments, Applicants respectfully submit that the Examiner has already considered the amendments.

Further still, the amendments to claims 1, 16 and 30 are directed to formal matters and are not in response to prior art. Thus, the amendments to claims 1, 16 and 30 do not narrow the scope of the amended claims, and no prosecution-history estoppel results from the amendments.

Consequently, Applicants respectfully request that this object be withdrawn.

The Rejection Under 35 U.S.C. § 102(e) Over Servi

Claims 1, 16 and 30 stand finally rejected under 35 U.S.C. § 102(e) as anticipated by Servi et al. (Servi), U.S. Patent Application Publication No. 2004/0107400 A1.

Applicants respectfully traverse this rejection. Applicants respectfully submit that the subject matter of claims 1, 16 and 30 is not anticipated by Servi.

Regarding claim 1, Servi does not disclose a method for protecting data comprising associating n data information sectors with c redundancy information sectors, such that the c redundancy information sectors are based on the n data information sectors, and n and c are

integer value numbers greater than zero. In contrast, Servi discloses a method for protecting data in which a set of data symbols is protected by a set of parity points. While in paragraph [0052], Servi discloses that a data set and a parity set created to protect the data set may be stored in different locations on the same storage medium; Servi is completely silent regarding an arrangement of the data set and the parity set. Accordingly, Servi is silent regarding associating information sectors with redundancy information sectors.

In response to Applicants' arguments, the Examiner states at page 8, lines 13-17, of the final Office Action:

With regard to the rejections under 35 USC § 102(e), it is noted that parity data as used in data processing systems is redundancy data associated with the data that it is meant to protect. The meaning of "parity" as used in RAID systems was specifically defined as such by the RAID Advisory Board (now disbanded). In fact, any prior art RAID system that utilized parity data would have taught claims 1, 16 and 30.

Applicants respectfully submit that the Examiner's statement misses the point Applicants made in the previously submitted argument and elaborate on in the Examiner's response. In particular, Servi is silent regarding associating information sectors with redundancy information sectors. The Examiner's response relates to a definition of parity as used in RAID systems. Applicants respectfully submit that the Applicants have not and are not distinguishing the subject matter of claim 1 based on a definition of parity.

Additionally, the Examiner's assertion that "any prior art RAID system that utilized parity data would have taught claims 1, 16 and 30" is respectfully traversed. In that regard, the Examiner is invited to identify with specificity any prior art that anticipates claims 1, 16 and 30 rather than just merely make an unsupported assertion that the subject matter of claims 1, 16 and 30 would have been taught by any prior art RAID system that utilized parity data.

Because the Examiner has failed to identify with specificity any prior art, including Servi, that anticipates claim 1, and because the Examiner has failed to identify with specificity any prior art, including Servi, that renders claim 1 obvious, the subject matter of claim 1 is allowable.

Regarding claim 16, Applicants respectfully submit that claim 16 is not anticipated by Servi. More specifically, Servi does not disclose a storage medium having a recording format comprising c redundancy information sectors that are associated with n data information sectors

to form a segment, such that the c redundancy information sectors are based on the n data information sectors, n and c are integer value numbers greater than zero, and such that the segment is stored on a single storage medium that is part of a single storage unit in an array of storage units in a RAID-configured storage system. Similar to claim 1, Servi is silent regarding the arrangement of a data set and a parity set that has been created to protect the data set. Accordingly, Servi is silent regarding associating information sectors with redundancy information sectors and, therefore, does not anticipate the subject matter of claim 16.

Regarding claim 30, Applicants respectfully submit that claim 30 is not anticipated by Servi because Servi does not disclose a storage system comprising the claimed data segment that is stored on at least one storage unit, such that each data segment includes n data information sectors and c redundancy information sectors, and such that the c redundancy information sectors are based on the n data information sectors. Similar to claims 1 and 16, Servi is silent regarding the arrangement of a data set and a parity set that has been created to protect the data set. Accordingly, Servi is silent regarding associating information sectors with redundancy information sectors and, therefore, does not anticipate the subject matter of claim 30.

Consequently, Applicants respectfully request that the Examiner withdraw this rejection and allow claims 1, 16 and 30.

The Rejection Under 35 U.S.C. § 103(a) Over Servi In View of Kaneda

Claims 3, 6-9, 13-15, 18, 23, 24, 28, 29, 32, 37, 38, 42 and 43 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over Servi in view of Kaneda et al., U.S. Patent No. 5,958,067.

Applicants respectfully traverse this rejection. Applicants respectfully submits that the subject matter of any of claims 3, 6-9, 13-15, 18, 23, 24, 28, 29, 32, 37, 38, 42 and 43 is patentable over Servi in view of Kaneda. Applicants respectfully submit that Servi and Kaneda are not properly combinable to form a basis for rejection of these claims.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there

must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (See, also, MPEP §§ 706.02(j) and 2143).

Regarding the first basic criterion for establishing the a *prima facie* case of obviousness, contrary to the Examiner's statement there is no suggestion in either Servi or Kaneda to combine Servi with Kaneda for "improved response performance and throughput." While the Examiner cites column 3, lines 51-56, of Kaneda as support for such a motivation, the particular portion of Kaneda cited by the Examiner relates to a general description of the Kaneda system. Moreover, Kaneda does not disclose or suggest that the Kaneda disk array system can utilize an error correction and erasure code that uses a parity set and a data set having a relationship defined by a bipartite graph, such as that disclosed by Servi. Further still, Servi does not disclose or suggest that the disclosed bipartite-graph-based error correction and erasure codes can be used with an array type disk system that updates redundant data in an asynchronous manner with disk access such as that disclosed by Kaneda.

On page 9, at lines 1-10, in the final Office Action, the Examiner responds to this argument by stating:

However, all of the arguments presented on pages 9-12 of the remarks rely on the *bodily incorporation* of two systems (i.e., Servi and Keneda [sic]; Servi and Hetzler), which does not reflect the combinations suggested by the rejections. In the rejections, the secondary references are included because only particular features of those references are meant to be incorporated into the Servi system (e.g., RAID 6, RAID (3+3), RAID 51, etc.), as outlined in the rejections. Applicant has already admitted that many of these particular features were known in the prior art (note pages 1-3 of applicant's specification). The examiner agrees. The various RAID configurations and error correction codes recited in the claims

were abundantly well known as common storage options in the art of digital data storage at the time of the invention.

Applicants respectfully submit that by the Examiner's statement, the Examiner essentially admits there is no suggestion or motivation in either Servi or Kaneda for modifying Servi or for combining Servi and Kaneda as a basis for this rejection. That is, the Examiner admits that Kaneda is only included in the rejection because particular features of Kaneda are known in the prior art. Thus, it would seem that based on this admission it is unnecessary for the Examiner to even identify Kaneda as a basis for this rejection. The Examiner would then only need to rely on 'particular features known in the prior art' in combination with Servi as the basis for this rejection. It follows, then, that if the Examiner only really needs to rely on 'particular features known in the prior art,' the Examiner would merely need to assert a motivation or suggestion in the knowledge generally available to one of ordinary skill in the art to modify Servi or to combine the particular features known in the prior art with Servi. Therein, however, lies the problem with the Examiner's rejection. The Examiner has not alleged any knowledge generally available to one of ordinary skill in the art for modifying Servi or for combining the particular features known in the prior art with Servi, and the Examiner has admitted that Servi and Kaneda provide no suggestion or motivation for combining Servi and Kaneda as a basis for this rejection. Accordingly, there is no basis for this rejection.

One additional deficiency with this rejection is with the Examiner's premise that the subject matter of claims 3, 6-9, 13-15, 18, 23, 24, 28, 29, 32, 37, 38, 42 and 43 is merely the 'particular features known in the prior art.' To the contrary, the subject matter of claims 3, 6-9, 13-15, 18, 23, 24, 28, 29, 32, 37, 38, 42 and 43 comprises the limitations of each respective claim in combination with the limitations of respective base claim(s) of the particular claim. And, for each claim, the Examiner has not established a *prima facie* case of obviousness.

Thus, Applicants respectfully submit that it is only by impermissible hindsight that the Examiner is able to reject claims 3, 6-9, 13-15, 18, 23, 24, 28, 29, 32, 37, 38, 42 and 43 based on the combination of Servi and Kaneda. Neither of the applied publications provides a proper suggestion for combination. Further, the Examiner has not identified a motivation or suggestion in the knowledge generally available to one of ordinary skill in the art to modify Servi or to combine the 'particular features known in the prior art' with Servi. It is only by the Applicants'

disclosure that the Examiner can select particular features of Servi, Kaneda or ‘particular features known in the prior art’ to make the rejection.

Consequently, Applicants respectfully request that the Examiner withdraw this rejection and allow claims 3, 6-9, 13-15, 18, 23, 24, 28, 29, 32, 37, 38, 42 and 43.

The Rejection Under 35 U.S.C. § 103(a) Over Servi In View of Hetzler

Claims 2, 4-7, 10-12, 17, 19-22, 25-27, 31, 33-36 and 39-41 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over Servi in view of Hetzler et al. (Hetzler), U.S. Patent Application Publication No. 2005/0015700 A1.

Applicants respectfully traverse this rejection. Applicants respectfully submit that the subject matter of any of claims 2, 4-7, 10-12, 17, 19-22, 25-27, 31, 33-36 and 39-41 is patentable over Servi in view of Hetzler. Applicants respectfully submit that Servi and Hetzler are not properly combinable to form a basis for rejection of these claims.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant’s disclosure. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (See, also, MPEP §§ 706.02(j) and 2143).

Regarding the first basic criterion for establishing the a *prima facie case* of obviousness, contrary to the Examiner's statement, there simply is no suggestion in either Servi or Hetzler to combine Servi with Hetzler for “improved performance, protection and efficiency.” In particular, Hetzler does not disclose or suggest that the disclosed RAID 3 + 3 system can utilize an error correction and erasure code that uses a parity set and a data set having a relationship defined by a bipartite graph, such as that disclosed by Servi. Likewise, Servi does not disclose or

suggest that the disclosed bipartite-graph-based error correction and erasure codes can be used with the Hetzler RAID 3 + 3 system.

In fact, Hetzler discloses that at least one Maximum Distance Separation code that can be used with the RAID 3+ 3 system is a Reed-Solomon code. (See Hetzler, paragraph [0021].) Servi teaches away from use of a Reed-Solomon code by highlighting drawbacks of a Reed-Solomon code in paragraph [0006] and [0126] and in Table 9. Further, Servi provides no disclosure that a Reed-Solomon code should be used in place of the Servi bipartite-graph-based error correction and erasure code. Accordingly, Applicants respectfully submit that it appears that the Examiner is completely overlooking this disclosure of Servi.

Applicants respectfully submit that by the Examiner's statement at page 9, lines 1-10, of the final Office Action, the Examiner essentially admits there is no suggestion or motivation in either Servi or Hetzler for modifying Servi or for combining Servi and Hetzler as a basis for this rejection. That is, the Examiner admits that Hetzler is only included in the rejection because particular features of Hetzler are known in the prior art. Similar to the rejection based on Servi and Kaneda, it would seem that based on this admission that it is unnecessary for the Examiner to even identify Hetzler as a basis for this rejection. Accordingly, the Examiner would then only need to rely on 'particular features known in the prior art' in combination with Servi as the basis for this rejection. It follows, then, that if the Examiner only really needs to rely on 'particular features known in the prior art,' the Examiner would merely need to assert a motivation or suggestion in the knowledge generally available to one of ordinary skill in the art to modify Servi or to combine the particular features known in the prior art with Servi. Therein, however, lies the problem with this rejection, much like the problem with the rejection based on Servi in view of Kaneda. The Examiner has not alleged any knowledge generally available to one of ordinary skill in the art for modifying Servi or for combining the particular features known in the prior art with Servi, and the Examiner has admitted that Servi and Hetzler provide no suggestion or motivation for combining Servi and Hetzler as a basis for this rejection. Accordingly, there is no basis for this rejection.

One further deficiency with this rejection is with the Examiner's premise that the subject matter of claims 2, 4-7, 10-12, 17, 19-22, 25-27, 31, 33-36 and 39-41 is merely the 'particular features known in the prior art.' To the contrary, the subject matter of claims 2, 4-7, 10-12, 17, 19-22, 25-27, 31, 33-36 and 39-41 comprises the limitations of each respective claim in

combination with the limitations of respective base claim(s) of the particular claim. And for each claim, the Examiner has not established a *prima facie* case of obviousness.

Thus, Applicants respectfully submit that it is only by impermissible hindsight that the Examiner is able to reject claims 2, 4-7, 10-12, 17, 19-22, 25-27, 31, 33-36 and 39-41 based on the combination of Servi and Hetzler. Neither of the applied patents provides a proper suggestion for combination. Further, the Examiner has not identified a motivation or suggestion in the knowledge generally available to one of ordinary skill in the art to modify Servi or to combine the ‘particular features known in the prior art’ with Servi. It is only by the Applicants’ disclosure that the Examiner can select particular features of Servi, Hetzler or ‘particular features known in the prior art’ to make the rejection.

Consequently, Applicants respectfully request that the Examiner withdraw this rejection and allow claims 2, 4-7, 10-12, 17, 19-22, 25-27, 31, 33-36 and 39-41

Applicants note that additional patentable distinctions between Servi and Kaneda, and Servi and Hetzler and the rejected claims exist; however, the foregoing is believed sufficient to address the Examiner's rejections. Likewise, failure of the Applicants to respond to a position taken by the Examiner is not an indication of acceptance or acquiescence of the Examiner's position. Instead, it is believed that the Examiner's positions are rendered moot by the foregoing and, therefore, it is believed not necessary to respond to every position taken by the Examiner with which Applicant does not agree.

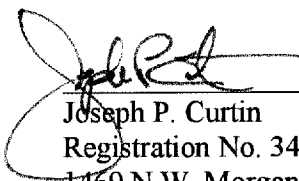
CONCLUSION

In view of the above amendments and arguments which present the claims in better form for consideration on appeal, it is urged that the present application is now in condition for allowance. Should the Examiner find that a telephonic or personal interview would expedite passage to issue of the present application, the Examiner is encouraged to contact the undersigned attorney at the telephone number indicated below.

It is requested that this application be passed to issue with claims 1-43.

Respectfully submitted,

Date: April 19, 2007

A handwritten signature in black ink, appearing to read "J.P. Curtin", is written over a horizontal line.

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